DOCUMENT RESUME

ED 065 823 CG 007 489

AUTHOR Taylor, Dalmas A.

TITLE Confirmed and Disconfirmed Expectations as a Function of Choice and Ability to Withdraw from that Choice.

PUB DATE 69
NOTE 35p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS Behavioral Science Research; *Human Relations; Interaction; *Interaction Process Analysis; *Interpersonal Competence; *Interpersonal Relationship; Social Problems; Space Orientation; Statistical Analysis; *Verbal Communication

ABSTRACT

Fifty-six sailors individually participated in a lengthy interaction session, ostensibly with another sailor (an experimenter confederate). They were subjected to one of four reward/cost expectancies (Continuous Positive, Later Positive, Continuous Negative, and Later Negative). Social penetration processes studied were average time talked, breadth and depth of interpersonal exchanges (self-disclosure). Ss were also required to express room design preferences assuming confinement with their alleged partners. A summary analyses of variance yielded results indicating greater increases over time in average time talked in the positive groups, a "contrast effect" in later positive groups, greater exchanges when Ss could not withdraw and when reinforcement was positive, and preference for living apart after a negative experience. The results were interpreted to suggest that interpersonal relationships are managed not only through verbal communication, but also through arrangement and utilization of space. (Author)

ED 065823

Confirmed and Disconfirmed Expectations as a Function of Choice and Ability to Withdraw from that Choice[1]

Dalmas A. Taylor
University of Maryland

Irwin Altman
University of Utah

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The present experiment is a replication and extension of an earlier study (Taylor, Altman, and Sorrentino, 1969) which was conducted as part of a program of research on the social penetration process (Altman and Taylor, in press). Social penetration refers to the range of interpersonal behaviors that occur in growing interpersonal relationships. These behaviors can be quantified in terms of amount of information exchange (breadth), intimacy level of information exchange (depth), and amount of time spent talking. Over the years we have looked at various aspects of relationship formation (e.g., reward/cost factors, personality characteristics, expectancy processes and situational determinants) using varying research strategies.

In a recent study (Taylor, Altman, and Sorrentino, 1969), we examined expectancy processes as internal regulatory mechanisms that mediate reward/cost experiences in interpersonal exchanges. Additionally, commitment to another person and ability or inability to withdraw was a focus of interest. Hypotheses regarding the role of rewards and costs in relationship formation were generally confirmed. Ss exposed to positive interpersonal experiences talked about more aspects of themselves (breadth), spoke longer when so doing (average time talked), and were

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generally more intimate (depth) than those in negative conditions. Ss under Later Positive conditions, those who had initially negative experiences disconfirmed, showed tendencies toward exaggerated increases in exchanges in at least one aspect of social penetration. These findings were seen as confirmations of earlier studies by Aronson and Linder (1965), Byrne and Nelson (1965), and Berkowitz (1960a, 1960b).

A large number of studies have demonstrated that commitment and length of relationship influence the nature and growth of interpersonal relationships (Marlowe, Gergen, and Doob, 1966; Thibaut and Kelley, 1959; Simmel, 1950). Attempts to manipulate commitment and longevity earlier (Taylor, Altman and Sorrentino, 1969) failed to produce any findings among measures of self-disclosure. However, Ss in a short-term Withdrawal condition who received positive reinforcement chose to live and work together, while those in the short-term Withdrawal condition getting negative reinforcement chose to live and work apart. No such differences were found in the long-term non-withdrawal condition. It was suggested that perhaps verbal exchanges are insensitive to situational effects, that the length of the interaction was too short to yield situational effects, or that the psychological difference between 3 weeks and 6 months was not great enough. Further, since each S was assigned a partner (No Choice), it was thought that this lack of choice may have psychologically weakened the commitment and withdrawal variables.

The present study is a replication with a greater difference between the Withdrawal (1 week) and Non-withdrawal (6 months) conditions.

In addition, we have changed the No Choice to a Choice manipulation in which Ss thought they would be able to select from a number of possible partners.

METHOD

Fifty-six Ss (sailors) individually participated in a lengthy interaction session, ostensibly with another sailor (an experimenter confederate). Ss were told that they had been selected for an important Navy program in which pairs of men would be living and working in an undersea capsule for a long period. Each S was informed that his partner was in another room and that they would be allowed to become acquainted over an intercom system.

Reward/Cost Expectancies

All Ss interacted with the confederate by choosing a minimum of two (but as many as they desired) personal statements from each of four 9-item decks of cards per interaction sessions. There were four such sessions, each lasting approximately 45 minutes. The items for each deck were taken from a pool of statements previously scaled by Taylor and Altman (1966) for intimacy and topical content using the Thurstone procedure of equal appearing intervals. Each deck contained three high intimacy items (scale values of 6.60 and above), three medium intimacy items (scale values between 4.25 and 6.59), and three low intimacy items (scale values of 4.24 and below). Four interpersonal reward/cost conditions were created through the confederate's responses to the subject: (1) Positive Confirm (continuous positive); the confederate behaved favorably toward the S, agreed with and approved of him 80% of the time throughout

four 45-minute sessions. (2) Negative Disconfirm (later positive); the confederate began by disagreeing and disapproving of the S in the first session, but behaved favorably in the last three sessions. (3) Negative Confirm (continuous negative); in this condition the confederate was disagreeable and disapproved 80% of the time throughout the four sessions. (4) Positive Disconfirm (later negative); the confederate initially agreed and responded favorably 80% of the time, then switched after the first period to being negative and disapproving 80% of the time. It was predicted that the various measures of social penetration would be higher in positive vs. negative conditions. Additionally, we were interested in seeing whether there would be a "contrast effect" in later positive groups, i.e., whether the initial negative experiences followed by positive experiences would yield greater rates of change and/or final levels of self-disclosure than in the continuous positive condition. Aronson and Linder (1965) used a similar procedure and found contrast effects in general "liking" judgments, although the confederate in the continuous positive condition was rated more friendly, nicer and warmer than in the negative-positive (later positive condition). Thus, the contrast effect was obtained for "liking" judgments, but not trait judgments. The present study permits an assessment of overt interaction effects, as well as general liking.

Situational Conditions

All Ss were told that they would be living and working as a team in isolation for 6 months; however, half of the Ss were told that they would be given an opportunity to choose another partner after the first week (Withdrawal condition). The remaining Ss expected to be teamed with

their partner for 6 months (No-Withdrawal condition).

Dependent Measures

Behavioral measures of the social penetration process included: (1) average time talked during each interaction period, based on the total number of seconds talked divided by the number of items chosen; (2) breadth or number of different items the Ss chose from a pre-arranged series to describe themselves during each of four interaction periods; and (3) depth or the mean intimacy scale value of items chosen for discussion.

Following each interaction period, all Ss completed the Interpersonal Judgment Scale (Byrne, 1961). This permitted each S to indicate how much he liked his partner, and how much he wanted to continue interacting with the same partner. This scale also made it possible to evaluate the effectiveness of the reward/cost manipulations.

Because we had changed one of the experimental conditions (No-Choice to Choice), modified the Withdrawal manipulation (3 weeks to 1 week), and employed a different confederate,[2] several questions had to be answered before we could expect comparability or hope to understand the findings of this study. Since a different confederate was being used, we had to address ourselves to possible confederate differences. One way we dealt with this was to have the confederate in this study replicate one of the experimental conditions (No Choice-Withdrawal -- 3 weeks) from the previous study. Since the present study used a Choice situation, we effected a partial replication that permitted an evaluation of possible differences between Choice and No Choice conditions. Finally, in an

effort to determine whether or not the failure of the Withdrawal manipulation in the earlier study, was due to the time span (3 weeks), we conducted a partial replication involving a 1 week vs. 3 week Withdrawal condition. In all cases, the replicated conditions used only Continuous Positive and Continuous Negative manipulations.

Prior to debriefing, Ss were informed that the Navy wished to have their ideas about undersea capsule design. Accordingly, each S was asked to make paired comparison choices of the three floor plans shown in Figure 1, judging which he thought best for him and his teammate, knowing

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Insert Figure 1 about here

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what they knew about one another.

The first arrangement is a "Separate Territorial" design, in which each man lives and works in his own compartment. With the exception of one task and a common storage area, all aspects of their lives are separate. In the second arrangement, termed "Joint Territorial", both men live in one room and work in the other room; the arrangement of the living area is "territorial" in the sense that each man's bed and personal equipment is on one side of the room, and is obviously identified as "his" place. In the third, "Joint Random", the men live in one room and work in the other room, as above, but here the layout of furniture and equipment is random, with neither man having a particular side of the room identifiable as his own.

Hypotheses

As in the earlier study, we predicted that the various measures of social penetration (time talked, level of intimacy of self-disclosure or depth, and amount of things talked about or breadth) would be higher in positive vs. negative conditions. It was also predicted that when the confederate was initially negative and then became positive that the Ss would respond with greater rates of increases in self-disclosure and final levels of self-disclosure higher than those in the Continuous Positive condition. Similar effects have been reported elsewhere by Aronson and Linder (1965) who found that a confederate was rated higher on general "liking" in a Later Positive vs. a Continuous Positive condition, and by Berkowitz (1960a, 1960b), who found analogous effects in two studies where he demonstrated a contrast effect between friendly and aggressive behaviors. Additionally, we anticipated a greater amount of self-disclosure in the Withdrawal condition and predicted that the Choice manipulation would enhance this effect. Finally, we predicted that positive experiences would result in Ss selecting capsule designs that reflected shared living experiences (e.g., Joint Random designs).

RESULTS

Analyses of variance on confederate differences, using data from the earlier study where necessary, indicated that both confederates were able to effect similar responses under comparable manipulations with one exception. Responses to the sociometric questionnaires indicated that the Ss in the Continuous Negative condition reacted less favorably to

earlier study. This was not true among the positive conditions. Partial replication of the long Withdrawal (3 weeks) vs. the short Withdrawal (1 week) showed only a slight tendency for Ss in the one week withdrawal condition to exhibit greater amounts of self-disclosure, especially at low levels of intimacy. The Choice vs. No Choice manipulation under a one week Withdrawal condition produced no significant differences in self-disclosure behaviors.

In summary, the results of these partial replications demonstrate that there are no significant psychological or confederate differences between the two studies that would invalidate comparison with one another.

A summary of analyses of variance for the three measures of social penetration appears in Table 1. Average time and breadth analyses were conducted on (1) scores broken down for levels of intimacy and (2) overall scores per interaction. Only an overall analysis for depth was appropriate since intimacy level was operationally defined as an index of depth.

Insert Table 1 about here

Means associated with a main significant effect for Periods ($F = 17.15$, $p < .001$) indicate an increase in time talked over successive periods of the experiment. This confirms the finding from several earlier studies regarding an increase in social penetration over time. Although the overall Reward/Cost main effect was not significant, means from a significant Reward/Cost X Period interaction ($F = 1.96$, $p < .05$),

summarized in Figure 2, indicate that Ss in the Continuous Positive and Later Positive conditions systematically increased in levels of penetration

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Insert Figure 2 about here

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over the course of the interaction. The Continuous Positve and Later Positive groups were not significantly different from one another, although the Later Positive group showed a slightly higher final level of pentration than the Continuous Positive group, giving slight evidence for a contrast effect.

While both negative reinforcement groups ended up at the same level of penetration, which was lower than that of the positive groups, they did differ from one another over time. The Later Negative groups showed a sharp increase in penetration from the first to second period, and then a rapid decline. The Continuous Negative groups showed practically no increase for most of the periods and then an increase in the last period.

These results are similar in some respects and different in other respects from the earlier experiment, where subjects had No Choice about whom their partner would be. Continuous Positive and Continuous Negative groups from the earlier study showed somewhat the same pattern as here, i.e., Continuous Positive groups showed a steady growth and Continuous Negative groups showed very little or no growth. Ss in the Later Positive and the Later Negative conditions exhibited different patterns here and in the earlier study. The Later Positive groups of the earlier study showed a much slower rate of growth and did not achieve the level of

penetration comparable to that of the Continuous Positive groups. Also, the Later Negative groups of this study showed a more volatile picture of growth and decline than found in the earlier study. The impression one gets from comparison of the data is that the penetration process was more variable and more responsive to experimental manipulations with reinforcement under the Choice conditions of the present study vs. the No-Choice conditions of the Taylor, et al (1969) study. This is somewhat in line with our general expectation that individuals would be less cautious and guarded where there is freedom of choice of a potential partner vs. the case where they were assigned to a relationship prior to interaction.

Means associated with a significant main effect for intimacy ($F = 2.52$, $p < .05$) are consistent with results from a number of studies performed in our laboratory, and indicate that a greater amount of time was spent talking about topics at low levels of intimacy.

Examination of means associated with a Reward/Cost X Withdrawal ($F = 2.46$, $p < .001$) and a Reward/Cost X Withdrawal X Intimacy ($F = 2.46$, $p < .05$) interaction indicated differences among experimental conditions as a function of length of the potential relationship. The means from the Reward/Cost X Withdrawal interaction indicate two distinct patterns of disclosure behavior (see Figure 3). Ss in the Continuous Positive and

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Insert Figure 3 about here

Later Positive conditions who were in the long term Non-Withdrawal condition

talked significantly more than Ss in the same reinforcement situation under the Withdrawal condition. Conversely, Ss in the Continuous Negative and Later Negative conditions who were in the short term Withdrawal condition talked significantly more that Ss in the same reinforcement situation but under the Non-Withdrawal manipulation. These data also provide confirmation for the predicted "contrast effect" -- in the Non-Withdrawal condition only. As can be seen in Figure 3, Ss in the Later Positive-Non-Withdrawal condition talk more than Ss in the Continuous Positive conditions. Amplification of these results can be seen by examining the means associated with the significant interaction of Reward/Cost X Situation X Intimacy level (see Figure 4). The above findings are essentially repeated at each of the three levels of intimacy. As regards the contrast effect, it seems to be most pronounced at medium and high intimacy levels.

Insert Figure 4 about here

Breadth of social penetration was measured by the number of items at each level of intimacy selected by Ss in talking with their partners. The significant main effect for intimacy ($F = 38.46$, $p < .001$) confirms findings from earlier studies that more information exchange occurs at low intimacy levels and least at high intimacy levels (high intimacy $\bar{X} = 4.07$; medium intimacy $\bar{X} = 5.07$; low intimacy $\bar{X} = 5.87$). Examination of means associated with the significant Period main effect ($p < .01$) indicated a drop in absolute amount of communication from Period 1

through Period 4. Although not significant, examination of the cumulative rates of accrual of information in low, medium and high levels of topical intimacy fits with earlier findings that the cumulative rate of accrual of intimate information, while constant from Period to Period, was less rapid than cumulative rate of accrual of non-intimate information.

Means from the Withdrawal X Period X Intimacy interaction ($F = 2.31$, $p < .05$) indicate no overall pattern. There is a consistent tendency for interaction at lower levels of intimacy to be greater than those at higher levels across withdrawal conditions; and the differences contributing to the interaction seem to be specific, nonsystematic differences among time Periods and levels of topical intimacy.

Depth of penetration, measured by mean intimacy scale value of items selected, showed no significant changes with experimental effects (see Table 1).

Sociometric Ratings

The Interpersonal Judgement Scale (IJS) developed by Byrne (1961) was used to assess each Ss evaluation of his partner. Ss indicated their ratings immediately following each interaction period by marking the questionnaire upon instructions from the experimenter. Not only did we replicate the Taylor-Altman-Sorrentino finding here, the increased effectiveness of the Withdrawal manipulation permitted an additional refinement (see Figure 5). As in the earlier study, Ss' evaluations,

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Insert Figure 5 about here

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attractions, and expectations conformed to the Reward/Cost conditions such that positive groups increased in favorableness of rating and negative groups decreased. Later Negative groups initially had high favorable impressions that diminished over trials, while the evaluations in the Later Positive groups increased as the reinforcement changed from mostly negative to mostly positive. As can be seen in Figure 5, these changes were somewhat different between the Withdrawal and Non-Withdrawal conditions. This difference occurs specifically in the disconfirmed groups. In the Withdrawal situation, the Later Negative (Positive Disconfirm) groups showed very little decline in their initial evaluations; whereas in the Non-Withdrawal situation, the evaluations of Ss under this same manipulation declined sharply, reaching the final level of the Continuous Negative (Negative Confirm) groups. Conversely, the Later Positive (Negative Disconfirm) groups reached higher levels of evaluation in the Withdrawal condition, even though the rate of increase was quite similar in the Withdrawal and Non-Wthdrawal conditions.

Examination of the means from a significant Withdrawal X Period ($F = 2.65$, $p < .05$) interaction indicated that Ss in the Withdrawal situation, over Periods, gave increasingly more favorable evaluations of their partners. This finding was also obtained in the Taylor-Altman-Sorrentino study. In agreement with interpretations of the "stranger-on-the-train" phenomenon, we suggest that this finding verifies that Ss under short commitment or easy withdrawal conditions will be less conservative in interacting with and/or evaluating another individual, except where the reinforcement is continuously negative.

Choices in Room Design

In order to determine whether the ecology data from the first study (Taylor, Altman, and Sorrentino, 1969) could be combined with the present data on design preferences, exact tests were run between the various reinforcement and situational conditions. Results indicated, in all cases, no differences in distribution of room design living preferences as a function of Choice--No-Choice conditions in the two studies, or among various combinations of Withdrawal--Non-Withdrawal, or among patterns of Reward/Cost conditions. Therefore, data from the two studies were combined and analyses conducted upon the pooled data. In fact, when detailed analyses were done for each study separately, they yielded parallel results, indicating that the basic Choice--No-Choice difference among the experiments had no effect on ecological data.

The data presented in Tables 2 and 3 describe living design preferences as a function of Reward/Cost conditions without regard to

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Insert Table 2 about here

Insert Table 3 about here

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situational Withdrawal--Non-Withdrawal factors. Ss in generally positive Reward/Cost conditions (Table 2) preferred to live together to a significantly greater extent than those in the negative Reward/Cost

conditions (73% vs. 36%, $X^2 = 11.50$, $p < .001$). A more detailed breakdown of these data (Table 3) indicate that this was particularly true for the Continuous Positive vs. both negative conditions (88% vs. 36%, $X^2 = 14.35$, $p < .001$). This was not characteristic of the Later Positive vs. Later Negative conditions (56% vs. 36%, $X^2 = 1.84$, ns). It should also be noticed that there was a significant difference between Ss in a Continuous Positive Reward/Cost condition and those in the Later Positive condition (88% vs. 56%, $X^2 = 6.01$, $p < .02$). No difference obtained between those in Continuous Negative vs. Later Negative situations. Thus, those Ss in the long-term, Continuous Positive reward condition preferred to live together to a greater extent than all others. While those in the Later Positive conditions showed a slightly greater preference for joint living arrangements than the other groups in negative conditions, this difference was not significant. It seems as if Ss who had any negative experiences chose designs that reflect separate living arrangements.

A general comparison of living preferences as a function of Withdrawal --Non-Withdrawal conditions indicated no difference. However, a further breakdown of these data according to patterns of positive or negative experiences with partner (Table 4) demonstrates that those in the short

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Insert Table 4 about here

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term, Withdrawal situation who had positive interaction experiences preferred living together while those who had negative or unfavorable experiences preferred separate living arrangements (83% vs. 22%, $X^2 =$

15.50, $p < .001$). No such differences appeared in the long term, non-withdrawal condition (positive experiences 62% vs. negative experiences 50%). Thus, there were differential effects of reward/cost conditions only in short-term withdrawal situations. When Ss were in the position of being teamed up with another man for a long period of time, there were no differences in living design preferences as a function of favorable or unfavorable experiences with the other man. Another way of viewing these data is to compare those who had either good or bad experiences within the withdrawal and non-withdrawal conditions. For those who had favorable interaction experiences, there was no difference in preference for living arrangements between the short term and long term relationships (83% vs. 62%, row a vs. row c comparison in Table 4). Thus, the long or short term commitment to another person made no difference in living preferences if the interaction history was favorable. However, there was a marginally significant ($p < .10$) difference between living preferences for those who had bad experiences in Withdrawal vs. Non-Withdrawal conditions. Those in the short term situation who had had unfavorable experiences showed a lower preference for joint living than those in the long term unfavorable situation (22% vs. 50%, $X^2 = 2.93$, $p < .10$; Row b vs. Row d of Table 4). Therefore, with favorable interaction experiences and either a short or long term relationship, preferences were for joint living. However, with bad experiences with another person and a short term relationship, preferences clearly were for separate living, whereas a long term situation led to mixed preferences for separate and joint living.

Table 5 analyzes these data according to whether the positive and negative experiences had been continuous or late in the relationship.

Insert Table 5 about here

For the short-term Withdrawal situation, the primary difference was among those who had Continuous Positive relationships versus all other conditions. They preferred living together to a greater extent than those who also had good experiences which came later (100% vs. 65%, exact test $p < .05$). No such differences occurred for those who had continuous vs. later negative experiences (17% vs. 27%, exact test ns). Thus, the data indicate that the primary source of difference in the short term Withdrawal condition derived from those who had Continuous Positive experiences vs. all others. In the Non-Withdrawal condition (Table 6),

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Insert Table 6 about here

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no comparable differences existed. While those who had continuously favorable experiences preferred living together more than apart, their preferences were no significantly different from all other groups (75% vs. 50%, 54% vs. 45%). In fact, there were no significant differences among any of the comparisons in the Reward/Cost conditions for the Non-Withdrawal manipulation.

DISCUSSION

The findings presented above provide empirical support for some areas of the social penetration framework that have been documented elsewhere. The success of the Withdrawal manipulation permits a refinement of earlier findings and support for some of our conceptualizations regarding situational effects on social penetration processes. However, the findings were inconsistent and occurred primarily in only two areas (average time talked and breadth of exchange). The greatest effect from the Reward/Cost manipulation occurred for average time talked. As regards this measure, positive groups (Continuous Positive and Later Positive) exhibited greater increases over time than both negative groups. A trend in the direction of a contrast effect was evidenced by later positive groups whose amount of time talked exceeded, though not statistically significant, the Continuous Positive groups by the third interaction period. For both average time talked and breadth of disclosure, greater amounts of exchange occurred for items associated with lower intimacy levels than those of higher intimacy levels. Surprisingly, breadth of penetration decreased over time, and there were no significant findings as regards depth. The Withdrawal manipulation was quite successful. Greater exchanges occurred when Ss could not withdraw and reinforcement was positive. The fact that Ss in the Later Positive condition talked significantly longer than those in the Continuous Positive condition was viewed as evidence for a contrast effect.

In the Withdrawal condition, Ss under negative reinforcement exhibited greater amounts of exchange than their counterparts in the Non-

Withdrawal condition. This latter instance was viewed as confirmation of the "stranger-on-the-train" phenomenon. In addition to providing confirmation of the Reward/Cost manipulation, the sociometric measure also gave evidence of the stranger-on-the-train type of behavior.

This study also supports the general proposition that the effects of interpersonal compatibility and incompatibility extend beyond feelings of liking or disliking another person; they are translated into spatial-ecological terms and influence what is seen as a desirable arrangement of the physical environment.

The data indicated that preferred living arrangements vary with different combinations of compatibility and possibility for withdrawal from an interpersonal situation. Those in a continuously compatible situation, who experienced positive relationships with another person throughout a three-hour period of interaction, preferred to live in the same room and work closely with the other man in a socially-isolated undersea mission. Those who initially had a negative experience followed by a longer compatible experience (a bad first impression which proved to be wrong) were somewhat cautious about having a close living relationship with the other person, but were interested in working with him. Those in the incompatible, negative relationships definitely preferred living and working apart, whether their incompatibility was continuously experienced, or occurred after an early positive experience. In fact, the data suggest that any negative experience, even for an initially short period, led to preferences for living apart.

As is often the case, experiments of this nature raise as many

questions as are answered. Nevertheless, we again succeeded in demonstrating that we could investigate the dynamics of interpersonal encounters in a highly controlled laboratory environment with the use of non-verbal as well as psychometrically scaled verbal materials. Shaughnessy and Levinger (1969) and Murdoch, Chenoweth, and Rissman (1969) using these same verbal materials demonstrated a similar success. Using a computer-simulated partner, Shaughnessy and Levinger (1969) found that a similar partner would be preferred to a dissimilar one as a potential date. These authors, however, failed to confirm a predicted relationship between similarity and intimacy. Murdoch, et al. investigated dyadic interaction between female Ss and the same male stranger (experimenter confederate) and confirmed hypotheses that passing strangers elicit more self-disclosure than persons with whom there is a potential for future interaction; and that a highly intimate stranger elicits more self-disclosure than one low in intimacy.

In the present study, post-experimental interviews revealed that the Ss believed they were communicating with a real person. Upon request all Ss gave physical descriptions of their "partners", suggesting that the information had been used in part to construct a cognitive model of the other person. In time, we hope to integrate these descriptions with personality descriptions and non-verbal cues in an effort to develop a model that can account for the intervening processes between overt behavior and experimentally manipulated variables (e.g., rewards and costs, situations, etc.).

Our hypotheses regarding rewards and costs and situations were

generally supported. We were able to replicate an earlier experiment with a different confederate and obtain strikingly similar findings. The change in the Withdrawal manipulation from 3 weeks to one week seemed to have made that manipulation more successful. The failure to confirm our hypotheses as regards the breadth and depth measures suggests that we need to improve our scaling procedures. We have long recognized that the depth score suffers from a regression-to-the-mean problem. Further research is needed to solve these problems. We have considered the possibility of multi-dimensional scaling, which would hopefully produce more sensitive stimulus materials for experimentation in social exchanges.

On the positive side, however, we have demonstrated that interpersonal relationships are not only managed through verbal communication, but also through the arrangement and utilization of space. Such adaptive processes need to be studied at several levels of functioning; verbal, subjective, perceptual and, obviously, overt behavioral levels. These data provide strong support for the social penetration conceptualization.

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FOOTNOTES

1. This research was conducted while both authors were at the Naval Medical Research Institute in Bethesda, Maryland. We are grateful to Mr. Leonard Oberlander who served as experimenter and helped with the data analyses. We also acknowledge with gratitude the dedication of Mr. Roy Alvarez who served as the confederate and also helped with the data analyses. This paper was presented at the Eastern Psychological Association, Boston, Massachusetts, April, 1972.

2. Unlike in the Taylor-Altman-Sorrentino study, the confederate in the present experiment was unaware of the experimental conditions. Intially, he was told only whether it was positive or negative. He was given more detail when it became necessary to establish a "disconfirm" manipulation.

Table 1

Summary Analyses of Variance For Average Time, Breadth, and Depth of Social Penetratic

F Ratios

Source of Variation	Average Time		Breadth		Depth
	Intimacy	Overall	Intimacy	Overall	
A (Reward/Cost)					
B (Situation)					
AB	2.46**	2.19*			
C (Period)	17.15****	19.05****	4.44***	4.38***	
AC		1.96**			
BC					
ABC					
D (Intimacy)	2.52**		38.46****		
AD					
BD					
ABD	2.46**				
CD					
ACD					
BCD			2.31**		
ABCD					

* p .10

** p .05

*** p .01

**** p .001

Table 2. Frequency of Living Design Preferences as a Function of Combined Positive and Negative Experiences

	Together	Apart	
Positive	35	13	48
Negative	17	30	47
	52	43	95

$X^2 = 11.50, p < .001$

Table 3. Frequency of Living Design Preferences as a Function of Reward/Cost Factors.

	Together	Apart	
Positive			
(a) Continuous	22	3	25
(b) Later	13	10	23
	35	13	48
Negative			
(c) Continuous	9	16	25
(d) Later	8	14	22
	17	30	47

(a-b) χ^2 = 6.01, $p < .02$

(a-c) χ^2 = 14.35, $p < .001$

(b-d) χ^2 = 1.84, ns

(c-d) χ^2 = ns

Table 4. Frequency of Living Design Preferences as a Function of Combined Positive and Negative Experiences and Situational Differences.

	Together	Apart	
Withdrawal			
(a) Positive	20	4	24
(b) Negative	5	18	23
	25	22	47
Non-withdrawal			
(c) Positive	15	9	24
(d) Negative	12	12	24
	27	21	48

(a-b) $\chi^2 = 15.50$, $p < .001$

(a-c) $\chi^2 = 1.69$, $p < .20$

(b-d) $\chi^2 = 2.93$, $p < .10$

(c-d) $\chi^2 = .34$, ns

Table 5. Frequency of Living Design Preferences as a Function of Reward/Cost Factors and Short-term Withdrawal.

	Together	Apart	
Withdrawal			
Positivie (a) Continuous	13	0	13
(b) Later	7	4	11
	20	4	24
Negative (c) Continuous	2	10	12
(d) Later	3	8	11
	5	18	23

(a-b) E = $p < .05$

(a-c) E = $p < .025$

(b-d) E = ns

(c-d) E = ns

Table 6. Frequency of Living Design Preferences as a Function of Reward/Cost Factors and Long-Term Non-Withdrawal.

	Together	Apart	
Non-withdrawal			
Positive (a) Continuous	9	3	12
(b) Later	6	6	12
	15	9	24
Negative (c) Continuous	7	6	13
(d) Later	5	6	11
	12	12	24

(a-b) E = ns

(a-d) E = ns

(b-d) E = ns

Figure I. Three Floor Plans of an Hypothetical Undersea Capsule

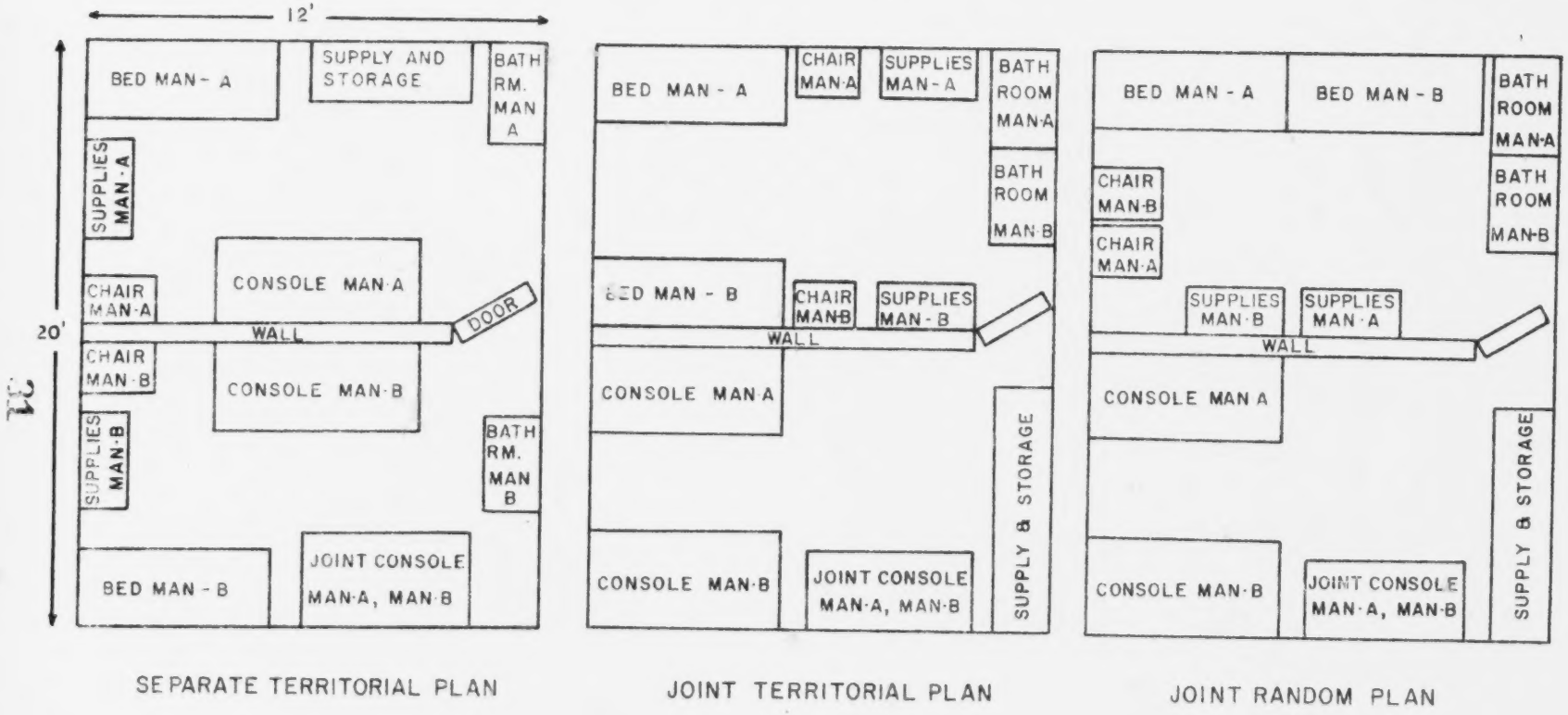

FIGURE 2 AVERAGE AMOUNT OF TIME SPENT TALKING IN FOUR REINFORCEMENT CONDITIONS

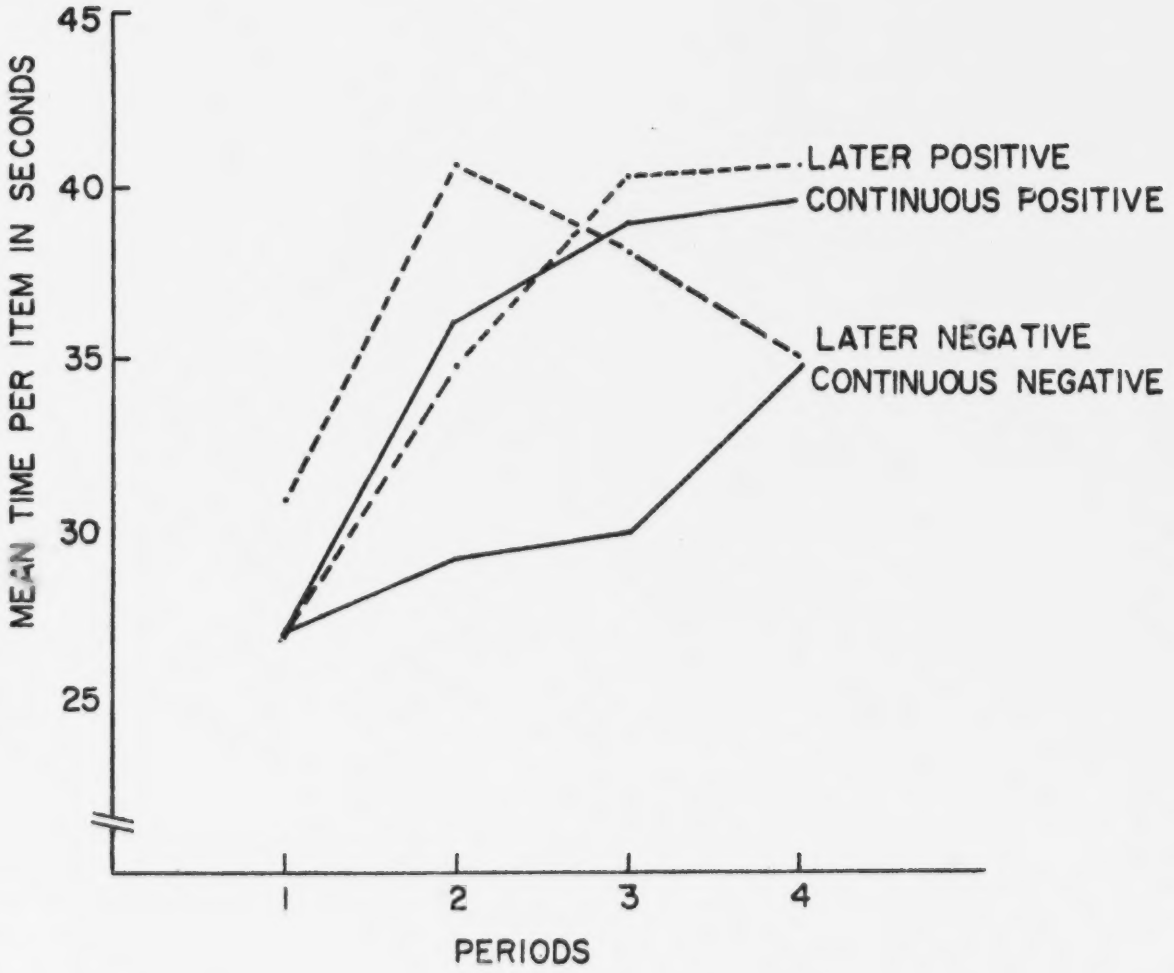

FIGURE 3. AVERAGE AMOUNT OF TIME SPENT TALKING PER ITEM FOR THE FOUR REINFORCEMENT PERIODS

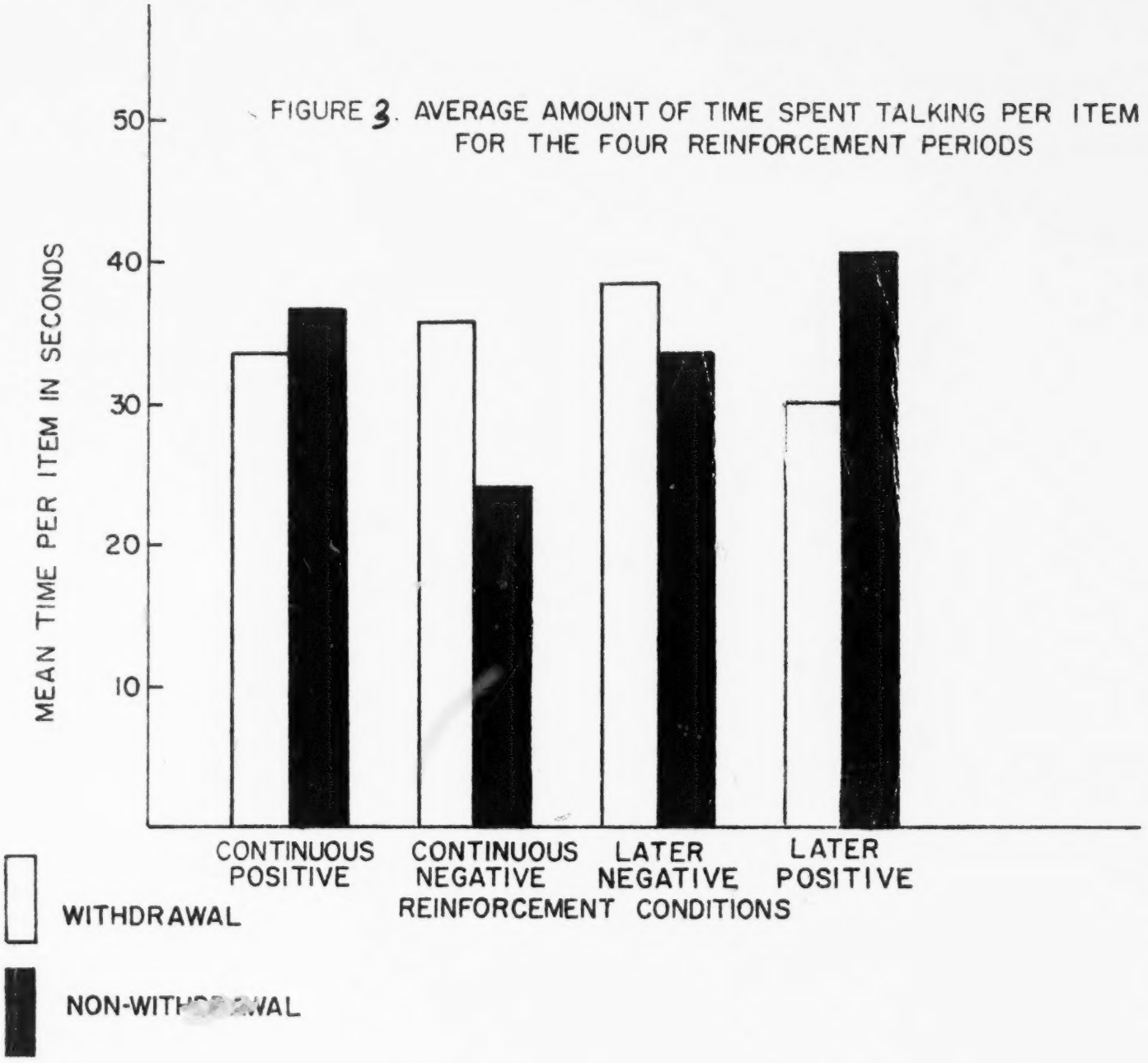

FIGURE 4 AVERAGE AMOUNT OF TIME SPENT TALKING PER ITEM FOR EACH OF THE FOUR REINFORCEMENT CONDITIONS BY THE THREE LEVELS OF INTIMACY

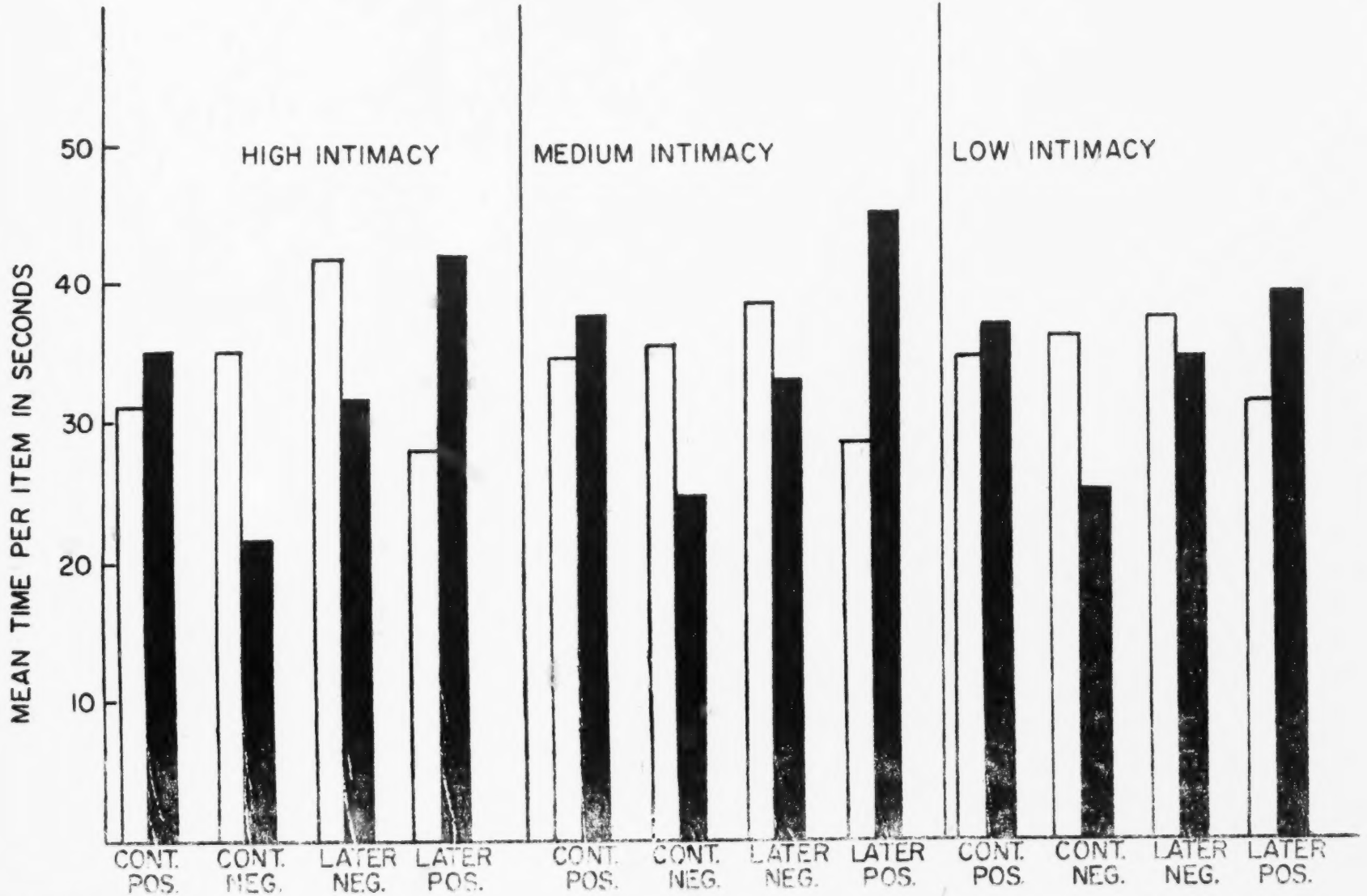

FIGURE 5. MEAN IJS SCORES FOR THE FOUR REINFORCEMENT CONDITIONS FOR THE WITHDRAWAL AND NON-WITHDRAWAL GROUPS